

Amendments to the Claims

This listing of the claims replaces all prior versions and listing of the claims in the present application.

Listing of Claims

1-99. (canceled)

100. (currently amended) A location service system for locating a target mobile terminal, comprising:

a client terminal which transmits a location request specifying the target mobile terminal, and requested accuracy and requested allowable age;

a positioning system which produces location information of the target mobile terminal; and

a gateway which transmits the location request to said positioning system and stores previously obtained location information of the target mobile terminal and a privacy profile of the target mobile terminal,

wherein the gateway performs a first privacy check for verifying the location request by referring to the privacy profile of the target mobile terminal, performs a reusability check to determine if the stored, previously obtained, location information satisfies the requested accuracy and the requested allowable age specified in said verified location request, and if the reusability check is affirmative, then performs a second privacy check on the stored, previously obtained, location information by referring to information specified in the location request based on the privacy profile of the target mobile terminal, without transmitting the verified location request to the positioning

system, in order to decide whether said gateway can transmit the stored, previously obtained, location information to the client terminal.

101. (currently amended) The location service system of claim 100, wherein said gateway transmits a notification message to said target mobile terminal if the privacy profile of the target mobile terminal indicates that the notification message is to be sent to said target mobile terminal in the first privacy check.

102. (canceled)

103. (currently amended) The location service system of claim 100, wherein said notification message includes ~~gateway transmits~~ a verification request ~~message to said target mobile terminal~~ and said gateway receives a verification report from the target mobile terminal to determine if the verification report allows said stored, previously obtained, location information to be forwarded to said client terminal.

104. (canceled)

105. (currently amended) A location method of a location service system for locating a target mobile terminal, wherein a positioning system for producing location information of the target mobile terminal in response to a request from a gateway is provided, the method comprising:

transmitting, at a client terminal, a location request specifying the target mobile terminal, requested accuracy and requested allowable age;

~~transmitting, at a gateway which stores previously obtained location information of the target mobile terminal, the location request to a positioning system which produces location information of the target mobile terminal in response to the location request from the gateway;~~

performing, at the gateway which stores previously obtained location information of the target mobile terminal and a privacy profile of the target mobile terminal, a first privacy check for verifying the location request from the client terminal by referring to the privacy profile of the target mobile terminal;

performing, at the gateway, a reusability check to determine if the stored, previously obtained, location information satisfies the requested accuracy and the requested allowable age specified in said verified location request; and

performing, at the gateway, a second privacy check on said stored, previously obtained, location information by referring to information specified in the verified location request in order to decide whether the gateway can transmit the stored, previously obtained, location information to the client terminal without skipping the step of transmitting the verified location request to the positioning system if said reusability check is affirmative.

106. (currently amended) The method of claim 105, wherein the performing of the second privacy check comprises the step of transmitting a notification message to said target mobile terminal if the privacy profile of the target mobile terminal indicates that the notification message is to be sent to the target mobile terminal in the first privacy check.

107. (canceled)

108. (currently amended) The method of claim ~~[[105]]~~106, wherein the step of transmitting the notification message to said target mobile terminal includes ~~performing of the second privacy check comprises:~~

transmitting a verification ~~request~~ message to said target mobile terminal;

receiving a verification report from the target mobile terminal; and

determining if the verification report allows said stored, previously obtained, location information to be forwarded to said client terminal.

109. (canceled)

110. (currently amended) A gateway of a location service system for locating a target mobile terminal, wherein a positioning system for producing location information of the target mobile terminal is provided, the gateway comprising ~~wherein the system comprises:~~

~~a client terminal which transmits a location request specifying the target mobile terminal, requested accuracy and requested allowable age; and~~

~~a positioning system which produces location information of the target mobile terminal in response to the location request from the gateway;~~

storage means for storing ~~wherein the gateway stores~~ previously obtained location information of the target mobile terminal from the positioning system and a privacy profile of the

target mobile terminal;[[,]]

~~transmits the location request to the positioning system,~~
~~performs a first privacy check means for verifying [[the]] a~~
~~location request specifying the target mobile terminal, requested~~
~~accuracy, and requested allowable age from [[the]] a client~~
~~terminal by referring to the privacy profile of the target mobile~~
~~terminal stored in the storage means;[[,]]~~

~~performs a reusability check means for determining to~~
~~determine if the stored, previously obtained, location information~~
~~stored in the storage means satisfies the requested accuracy and~~
~~the requested allowable age specified in the verified location~~
~~request;[[,]] and~~

second privacy check means for performing, if the reusability
check is affirmative, ~~performs~~ a second privacy check on said
stored, ~~previously obtained,~~ location information stored in the
storage means by referring to information specified in the
location request, without transmitting the verified location
request to the positioning system, in order to decide whether the
~~gateway can transmit the~~ stored, ~~previously obtained,~~ location
information stored in the storage means can be transmitted to the
client terminal.

111. (currently amended) The gateway of claim 110, wherein
said gateway further comprising notification means for
transmitting ~~transmits~~ a notification message to said target
mobile terminal if the first privacy check means has detected, in
the privacy profile of the target mobile terminal, that the
notification message is to be transmitted to the target mobile

~~terminal, and subsequently forwards the stored location information to said client terminal.~~

112. (canceled)

113. (currently amended) The gateway of claim [[110]]111, wherein said notification message includes ~~gateway transmits a verification request message to said target mobile terminal, and~~ said notification means receives a verification report from the target mobile terminal[,], and determines if the verification report allows the stored, previously obtained, location information to be forwarded to the client terminal.

114. (canceled)

115. (currently amended) A location service system for locating a target mobile terminal, comprising:

a plurality of client terminals which transmit a location request specifying the target mobile terminal, and accuracy and allowable age of stored location information;

a positioning system which produces location information of the target mobile terminal; and

a gateway which stores a privacy profile of the target mobile terminal and location information of the target mobile terminal previously obtained from said positioning system as a result of the gateway transmitting thereto an initial location request from one of said client terminals,

wherein the gateway performs a first privacy check for verifying a current location request from any of said client terminals by referring to the privacy profile of the target mobile terminal, performs a reusability check to determine if the stored,

previously obtained, location information satisfies the accuracy and allowable age specified in said verified current location request, and if the reusability check is affirmative, then performs a second privacy check to determine if the stored, previously obtained, location information further satisfies a condition specified by said target mobile terminal in the privacy profile and transmits the stored, previously obtained, location information to the requesting client terminal if the second privacy check is affirmative.

116. (previously presented) The location service system of claim 115, wherein the gateway transmits said verified current location request to the positioning system to obtain current location information of the target mobile terminal if said reusability check is negative and performs a second privacy check to determine if the current location information satisfies a condition specified by said target mobile terminal and transmits the current location information to the requesting client terminal if the second privacy check is affirmative.

117. (previously presented) The location service system of claim 115, wherein said gateway transmits a notification message to said target mobile terminal.

118. (currently amended) The location service system of claim 117, wherein said

~~gateway stores a privacy profile of said target mobile terminal and~~ transmits said notification message to said target mobile terminal if said privacy profile indicates that said notification message is to be sent to said target mobile terminal.

119. (previously presented) The location service system of claim 115, wherein said gateway transmits a verification request message to said target mobile terminal and receives a verification report from the target mobile terminal to determine if the verification report allows said stored location information to be transmitted to said client terminal.

120. (currently amended) The location service system of claim 119, wherein said gateway ~~stores a privacy profile of said target mobile terminal and~~ transmits said verification request message to said target mobile terminal if said privacy profile indicates that said current location request is to be verified by said target mobile terminal.

121. (previously presented) The location service system of claim 115, wherein said condition specifies a time-zone and an area, and wherein said gateway transmits said stored location information to said client terminal if time of estimation and estimated location of said stored location information respectively satisfy said specified time-zone and area.

122. (currently amended) A location method of a location service system for locating a target mobile terminal, comprising the steps of:

a) transmitting, from one of a plurality of client terminals, a location request specifying the target mobile terminal;

b) transmitting, from a gateway, an initial location request from one of said client terminals to a positioning system to obtain current location information of the target mobile terminal

and storing the current location information as previously obtained location information of the target mobile terminal;

c) transmitting, from any of said client terminals, a current location request specifying the target mobile terminal, and accuracy and allowable age of stored location information;

d) storing at the gateway the previously obtained location information and a privacy profile of the target mobile terminal, and performing, at said gateway, a first privacy check for verifying said current location request be referring to the privacy profile of the target mobile terminal;

e) performing, at the gateway, a reusability check to determine whether the stored, previously obtained, location information satisfies the accuracy and allowable age specified in said verified current location request; and

f) if the reusability check is affirmative, performing, at said gateway, a second privacy check by referring to the information specified in the verified location request to determine whether the stored location information satisfies a condition specified by said target mobile terminal and transmitting the stored location information to the requesting client terminal if the second privacy check is affirmative.

123. (previously presented) The location method of claim 122, wherein step (f) comprises the steps of:

transmitting said verified current location request from said gateway to the positioning system to obtain current location information of the target mobile terminal if the first privacy check is negative; and

performing said second privacy check to determine whether the

current location information satisfies said condition; and
transmitting the current location information to the
requesting client terminal if the second privacy check is
affirmative.

124. (previously presented) The method of claim 122, wherein
step (e) comprises transmitting a notification message to said
target mobile terminal.

125. (currently amended) The method of claim 123, further
comprising ~~the steps of:~~

~~storing a privacy profile of said target mobile terminal; and~~
transmitting said notification message to said target mobile
terminal if said privacy profile indicates that said notification
message is to be sent to said target mobile terminal.

126. (previously presented) The method of claim 123, wherein
step (e) comprises the steps of:

transmitting a verification request message to said target
mobile terminal;

receiving a verification report from the target mobile
terminal; and

determining if the verification report allows said stored
location information to be transmitted to said client terminal.

127. (currently amended) The method of claim 126, wherein
step (e) comprises ~~the steps of:~~

~~storing a privacy profile of said target mobile terminal; and~~
transmitting said verification request message to said target

mobile terminal if said privacy profile indicates that said current location request is to be verified by said target mobile terminal.

128. (previously presented) The method of claim 122, wherein said condition specifies a time-zone and an area, and wherein said gateway transmits said stored location information to said client terminal if time of estimation and estimated location of said stored location information respectively satisfy said specified time-zone and area.

129. (currently amended) A gateway of a location service system for locating a target mobile terminal, wherein the location service system comprises:

a plurality of client terminals which transmit a location request specifying the target mobile terminal, and accuracy and allowable age of stored location information; and

a positioning system which produces location information of the target mobile terminal,

wherein said gateway stores a privacy profile of the target mobile terminal and location information of the target mobile terminal previously obtained from said positioning system as a result of the gateway transmitting an initial location request from one of said client terminals to said positioning system, performs a first privacy check for verifying a current location request from any of said client terminals by referring to the privacy profile of the target mobile terminal, performs a reusability check to determine if the stored location information satisfies the accuracy and allowable age specified in said

verified current location request, and if the reusability check is affirmative, then performs a second privacy check to determine if the stored, previously obtained, location information further satisfies a condition specified by said target mobile terminal in the privacy profile and transmits the stored location information to the requesting client terminal if the second privacy check is affirmative.

130. (previously presented) The gateway of claim 129, wherein the gateway transmits said verified current location request to the positioning system to obtain current location information of the target mobile terminal if the reusability check is negative, and performs a second privacy check to determine if the stored location information further satisfies a condition specified by said target mobile terminal and transmits the verified current location information to said client terminal if the second privacy check is affirmative.

131. (previously presented) The gateway of claim 129, wherein said gateway transmits a notification message to said target mobile terminal.

132. (currently amended) The gateway of claim 131, wherein said gateway ~~stores a privacy profile of said target mobile terminal and~~ transmits said notification message to said target mobile terminal if said privacy profile indicates that said notification message is to be sent to said target mobile terminal.

133. (previously presented) The gateway of claim 129, wherein said gateway transmits a verification request message to said target mobile terminal and receives a verification report from the

target mobile terminal to determine if the verification report allows said stored location information to be transmitted to said client terminal.

134. (currently amended) The gateway of claim 133, wherein said gateway ~~stores a privacy profile of said target mobile terminal and~~ transmits said verification request message to said target mobile terminal if said privacy profile indicates that said current location request is to be verified by said target mobile terminal.

135. (previously presented) The gateway of claim 129, wherein said condition specifies a time-zone and an area, and wherein said gateway transmits said stored location information to said client terminal if time of estimation and estimated location of said stored location information respectively satisfy said specified time-zone and area.